

Understanding Early Numeracy

Lessons from the Global Community

Kari Augustine, CESA 5 Curriculum Specialist
Wisconsin Mathematics Council Conference, May 7, 2009



Easy as 1, 2, 3

People come into the world ready to count its wonder



The Economist, December 30, 2008

Illustration by Jon Berkley





Numeracy Games

This site provides educational ICT activities linked to the English National Curriculum. All games are designed, made by and © copyright 2005 of James Barrett. These games are generally targeted at infant school teachers and parents of infant age children.

Mucky Monsters

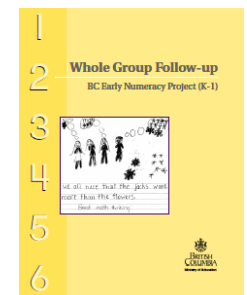
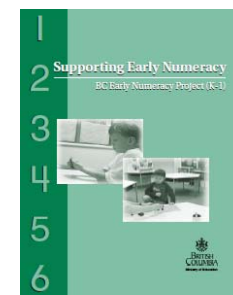
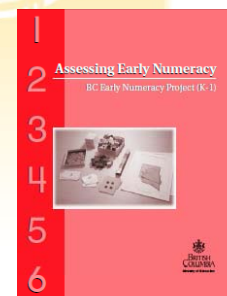


Mucky Monsters



Early Numeracy Project

British Columbia

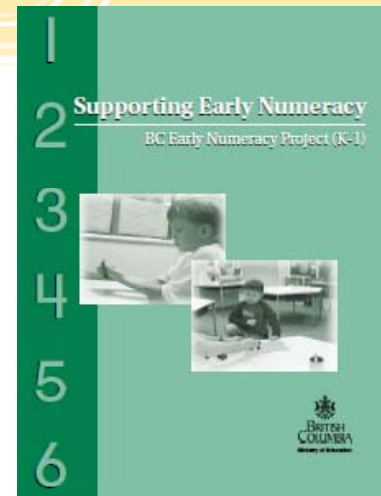


Early Numeracy Project

British Columbia

The Early Numeracy Project focused on three questions:

1. What assessment can be done in Kindergarten and Grade 1 to inform instruction so that fewer students need intervention later?
2. What are some ways to identify children's strengths and weaknesses in early numeracy?
3. What instructional strategies effectively enhance numeracy understanding?



Supporting Early Numeracy was developed by the British Columbia Early Numeracy Project to complement *Assessing Early Numeracy*.

- *Assessing Early Numeracy* helps teachers determine which children would benefit from support in grade one and identifies the aspects on which to focus.
- *Supporting Early Numeracy* is an instructional resource to support grade one students who are at risk of falling behind because they lack basic numeracy concepts, skills and attitudes. Children who would benefit from using these materials include those who:
 - need explicit and structured support
 - hesitate to ask for assistance
 - avoid taking risks
 - do not demonstrate growth or progress over time
 - might respond to an alternative approach

Supporting Early Numeracy

- Number sense involves number skills, number concepts and a positive mathematical disposition.
- Spatial activities involving hands-on experiences provide the sensory input that helps to develop mental imagery.
- Attitude is key. Children who see themselves as capable math thinkers and problem solvers are on the road to mathematical success.
- The focus is on meaning, with skills used in context. The more connections children can make, the better.
- Visual cues and formats support learning.
- Building mental imagery expands children's ability to think in flexible ways.
- Bridges are built to new learning by first reviewing what the children know and then connecting their knowledge to new goals.
- Emphasis is gradually put on making written records of the activities that can be used for reinforcement in the classroom and at home.



Surprise Box Intervention

Each of the seven parts of the Surprise Box resource includes the following headings:

- What do you need?
- What's in the box?
- What do you do?

Parts 2 through 6 also offer suggestions for:

- language to model and encourage
- processes to model and encourage
- dispositions to encourage



"Ask them to count, compare, order, describe, build and change, or pattern in progressively more complex ways each day and week, always with the intent of developing key number concepts connected with counting skills and organizational strategies."



Try a Surprise Box

- Day 1 Decorate
 Day 2 3 types of objects in groups of 2, 3, 5 = 10
 Day 3 Different objects, same groups → same, different, more, most, least to greatest
 Day 4 Repeat day 3 as needed or proceed to

Part 2 : sorting boards → group, match, organize, compare, fewer, fewest

Part 3 : sorting boards, numeral cards, dice pattern cards



Next Steps:

- ★ Two column bar graphs
- ★ Comparison Strips
- ★ Numeral Cards for 7 and 8 (if secure with 0-6)
- ★ Ladybug Mat (part to whole)
- ★ 10-Frame mats



Surprise Box Intervention

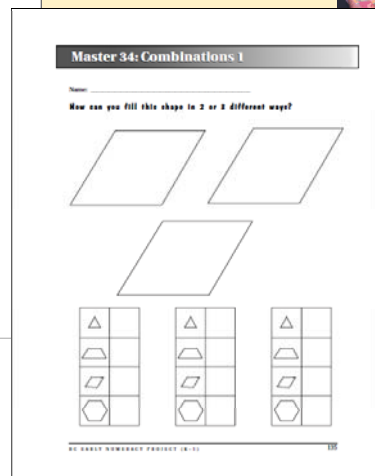
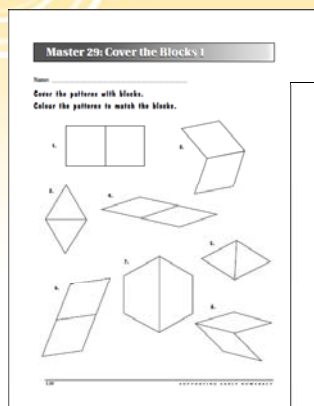
Good thinking!
That is a different
idea for sorting!

How many
buttons do we
have altogether?

Let's count as we
put them back in
our boxes!

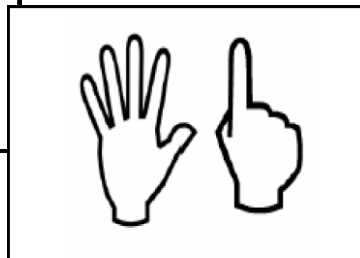
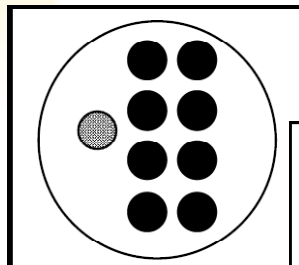


Cover the Blocks Activities



Winnipeg Early Years Activities

Prince Charles Education Resource Centre

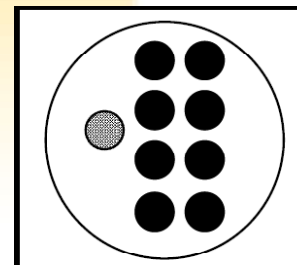


Tool Kit Blackline Masters

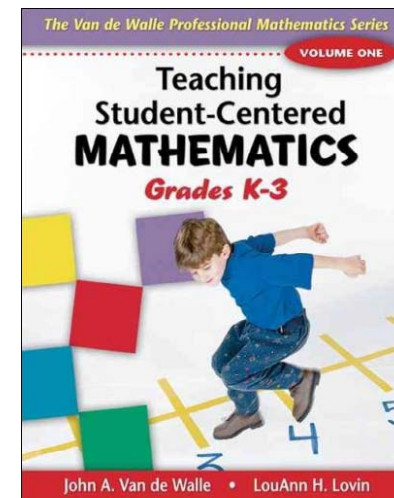


Winnipeg Early Years Activities

Prince Charles Education Resource Centre

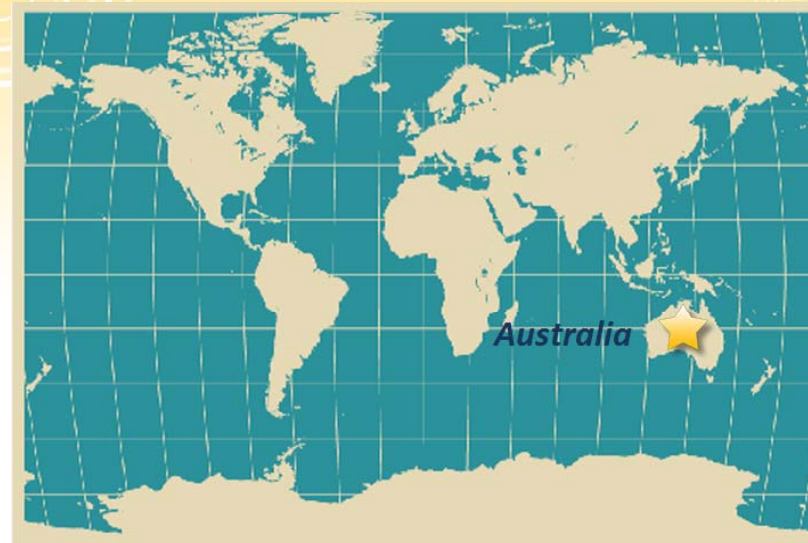
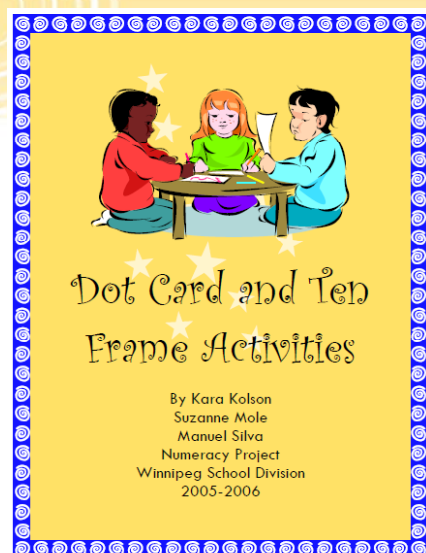


Source: John Van De Walle



Dot Card and Ten Frame Activities

Numeracy Project
Winnipeg School Division



2008 practice tests

We strongly recommend that practice tests are used to assist teachers and students to prepare for the NAPLAN testing. These 2008 practice tests are re-structured MAP tests.

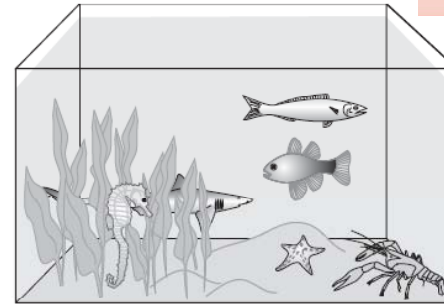
The practice tests range from KGP 3 to Band 5 for numeracy and reading. They are extremely useful for all classroom teachers to

- familiarise students with question type and test layout
- prepare and rehearse testing time allocation with students
- determine gaps in students' knowledge and inform future planning and programming
- assist in determining the NTCF Band the students are achieving at
- be used as a teaching tool/springboard for extended activities/open tasks.

2008 numeracy practice questions and answers by NTCF Strands

NTCF Strands	Bands	Answer sheet with open-ended task ideas
Number Sense (pdf 1.7Mb)	KGP 3 – Band 3	Number Sense answers (pdf 711kb)
Measurement and Data Sense (pdf 1.5Mb)	KGP 3 – Band 3	Measure and Data Sense answers (pdf 711kb)
Spatial Sense (pdf 1.5Mb)	KGP 3 – Band 3	Spatial Sense answers (pdf 691kb)
Number and Algebra (pdf 258kb)	Band 4	Number and Algebra answers (pdf 401kb)
Space and Measurement (pdf 182kb)	Band 4	Space and Measure answers (pdf 381kb)

1 Look at this fish tank.



What is above  ?



Numeracy Practice Questions (AU)

KGP3 to Band 3



Numeracy

Teaching and learning materials – numeracy

[Beginning School Mathematics \(BSM\)](#) | [Figure It Out](#) | [NZMaths](#) | [Bright Sparks](#) | [Developing School Maths Programmes](#) | [Development Band Mathematics](#) | [Problem Solving CDROM](#) | [Connected](#) | [Maths Stuff on wikED](#)

Here are some of the teaching and learning materials that teachers can use in their numeracy programmes.

Enriching the Number Framework with Beginning School Mathematics (BSM)



This book is a practical guide to help teachers to effectively use Beginning School Mathematics (BSM) in the delivery of the *Numeracy Project*.
<http://www.nzmaths.co.nz/numeracy/2005numPDFs/NumBSM.pdf>

[About PDFs](#) 

The Literacy and Numeracy Strategy

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- [Research and evaluation](#)
- [Home-School Partnership](#)
- [Māori in mainstream](#)



Online Numeracy PD

nzmaths home

Introduction

1: Number Framework

2: Strategy

3: Knowledge

4: Assessment

5: Grouping & Planning

6: Teaching Stage 1

7: Teaching Stages 2-3

Numeracy Development Projects Books

Book Name	Date Updated	File size (KB)
The Number Framework	17 Mar 08	502
The Diagnostic Interview	17 Mar 08	788
Getting Started	17 Mar 08	464
Teaching Number Knowledge	17 Mar 08	570
Teaching Addition, Subtraction and Place Value	17 Mar 08	608
Teaching Multiplication and Division	17 Mar 08	1311
Teaching Fractions, Decimals and Percentages	13 May 08	1340
Teaching Number Sense and Algebraic Thinking	17 Mar 08	569
Teaching Number through Measurement, Geometry, Algebra and Statistics	13 Aug 07	888
Enriching the Number Framework with BSM	17 Mar 08	1117
Home-School Partnership: Numeracy Handbook	1 Aug 08	

Teaching Numeracy

Home > Teaching Numeracy > Equipment Animations

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Equipment Animations

[Fingers](#): Shows how fingers can be used to solve simple addition sums.

[Number Strip](#): Shows how the Number Strip can be used to model subtraction.

Teaching Numeracy

Home > Teaching Numeracy > Material Masters

Counting

Material Masters

Number	Name	Date Updated	File size (KB)
Material Master 4-1	Numeral Cards	13 Aug 07	73
Material Master 4-2	Flip Strip	13 Aug 07	79
Material Master 4-3	Large Numerals	13 Aug 07	89
Material Master 4-4	Hundreds Board	13 Aug 07	68
Material Master 4-5	Fly Flips	13 Aug 07	91
Material Master 4-6	Ten Frames	13 Aug 07	57
Material Master 4-7	Thousands Book	13 Aug 07	82
Material Master 4-8	Large Number Lines	13 Aug 07	81

Search

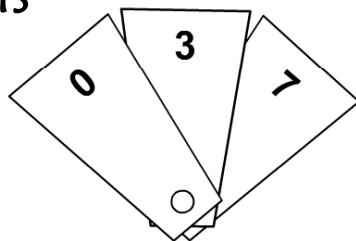
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addition
facts areas
basic facts
continue counting
division equations estimate
fractions lengths measures

Number Fans Number Identification



Teacher Notes

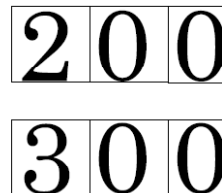
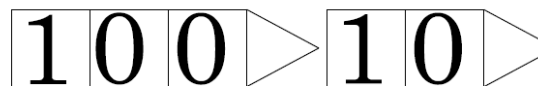
Demonstrate how the Number Fan opens out to show different numbers.



Material Master 4-14

Arrow Cards

Book 4, pages 11, 26; Book 5, page 11



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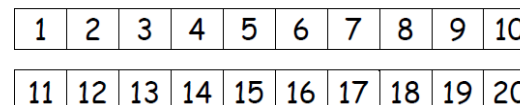
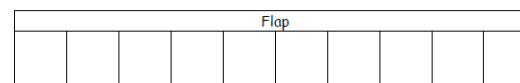
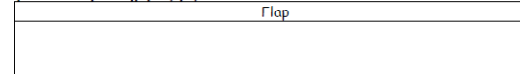
Teachers may copy

Material Master 4-2

Numeral Flip Strip

Book 4, page 11

Enlarge to A3 if you want a bigger strip. Stick the two flaps together and cut vertically on the lines. The number strips can then be cut out and placed inside the strip and the appropriate flaps lifted.



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Numeracy Development Projects



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☐ 3-5
☐ 6-8
☐ 9-12

Advanced Options

Show only activities with this word or phrase in the title or description:

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Five Frame

How many are empty?

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Games

1. How many?
2. Build
3. Fill
4. Add
5. Play all

0 1 2 3 4 5 6 7 8 9

1-9490-Directors - WMC 2009

Karl Augustine [wikispaces](#)

WMC 2009

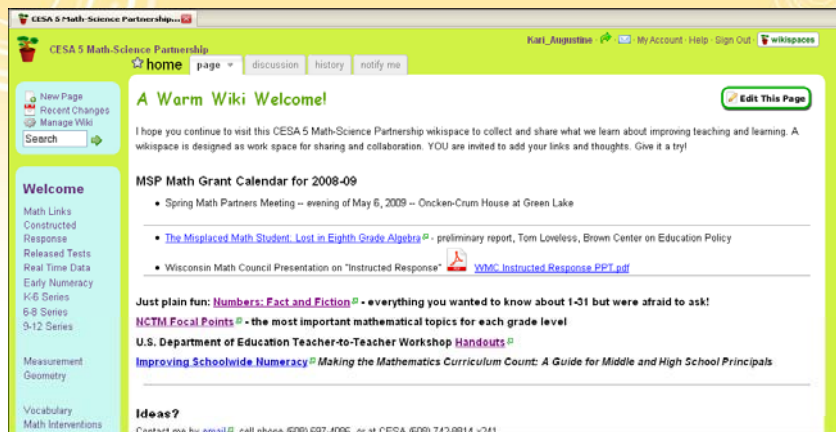
Understanding Early Numeracy: Resources from the Global Community

WMC 2009, Karl Augustine, CESA 5 Curriculum Specialist, augustinek@cesa5.k12.wi.us

- [ict games](#) (linked to the English National Curriculum)
 - [Mucky Monsters](#)
 - [Whack a Mole](#)
- [Early Numeracy Project - BC](#) Assessing Early Numeracy, Supporting Early Numeracy, Whole Group Follow-up
- [Numeracy Project, Winnipeg School Division](#) - Early Years Resources

Home
 Best Practice
 CMP2
 CPI Standards
 Early Childhood
 Everyday Math
 GT: Differentiation
 Literacy
 Literacy Coaching
 Math Coaching
 Numeracy
 Science
 Social Studies

Understanding Early Numeracy: Resources from the Global Community
<http://i-9490-directors.wikispaces.com/WMC+2009>



Math Wiki

<http://cesa5mathscience.wikispaces.com/>

Please take a minute to
complete an evaluation.

*I hope you enjoyed your
"virtual tour."*

~ Kari Augustine

